

Denise M. Sheehan
Commissioner

FIELD INVESTIGATION REPORT

Site Name: 9524 and 9540 Niagara Falls Boulevard, Niagara Falls, Niagara County

Date(s) of Visit: October 2 - 4, 2006

Site Contact Name and Title: **Exemption 7(C)**, Property owner, 9540 NFB
Exemption 7(C), owner Rapid Bowling Center, 9524 NFB

NYSDEC Staff: Jerry Riggi

Reason for Investigation:

To complete the scoping survey begun on September 21, 2006 confirming the presence of radioactive slag used as aggregate in the blacktop parking lot or as a bedding for the asphalt. Identify elevated readings and determine if they pose an immediate threat to the general public. Obtain biased samples from the elevated areas for further analysis. Compare readings and sample analysis to data obtained in a 1979 survey of the properties in question.

Preliminary Discussion:

NYSDEC staff arrived at 9524 and 9540 Niagara Falls Boulevard (NFB) at 0650 on Monday, October 2, 2006. Proceeded to Mode Image Salon approximately one-tenth of a mile north of the site on NFB, to perform instrument checks (refer to the instrument information). Returning to the site, it was noted there was a roll-off container located behind Dunn Tire on the ten foot swath of original blacktop. An inspection of the container revealed it was empty.

To assist in the mapping of the parking lot, the existing painted lines denoting the individual parking spots were used. Each parking spot measures 9 feet 6 inches wide by 17 feet long. The rows between parking spots measure 19 feet 6 inches by 9 feet 6 inches wide. The rear of the parking lot at 9540 extends an additional 20 feet from the last parking spot to the marshy area. The western edge (hotel side) extends an additional 4 feet 3 inches from the end of the parking row to the grass. The width of the parking lot from the western edge to the driving lane separating the lot at 9524 from the lot at 9540 is 137 feet plus. The lot measures 202 feet plus

from the back wall of the building at 9524 NFB to the marshy area in the rear. Refer to the attached map for the dimensions and layout of the parking lot.

Exemption 7(C), the owner of the Rapid Bowling Center arrived on site at 0830. We exchanged names and business cards and discussed the purpose of our visit. He was very pleased regarding our quick response and performance.

At approximately 1100, **Exemption 7(C)** arrived with a small fleet of vehicles from Ken Young Paving in tow. He stopped to discuss his intent to blacktop the 10 feet wide swath behind Dunn Tire. (The area was surveyed in our previous site visit on September 21, 2006 and was noted to be in poor condition.) The information was passed on to Barb Youngberg and the New York State Department of Health (NYSDOH). The decision was made to let them proceed with the paving. Prior to starting paving operations, the aforementioned roll-off container was pulled off of the swath to be paved and placed in the Dunn Tire rear lot. At approximately 1230, they were observed shoveling loose material into wheelbarrows, just north of the newly paved area, in the triangle of older pavement identified in the previous survey of September 21, 2006. After a brief introduction and discussion with **Exemption 7(C)** (last name is unknown but assuming it is **Exemption 7(C)** as he appeared to be in charge), the wheelbarrow(s) of material were moved to a low background area in the used car lot for survey. Survey of the material indicated no readings above background. The material was dumped in an existing debris pile by the fenced area. An additional two wheelbarrows of material were collected and the survey process was repeated with the same results. This triangular area was then re-paved.

In the midst of the above operation, it was observed the ten foot swath of original asphalt had been scraped prior to paving. Material not previously observed was evident along the entire length of the swath including a large pile of debris (approximately 25 feet x 13 feet x 4 ½ feet) at the end of the swath in the marshy area. The material consisted of soil, blacktop, and loose slag. The material was now mixed /covering other debris along this swath including wooden pallets and a pile of shingles. Initial survey of this area with the Exploranium showed numerous spots in excess of 550 uR/hr. **Exemption 7(C)** stated the area had been scraped with the front bucket of a backhoe. The actual date is unknown but it happened sometime between our last visit on September 21, 2006 and today.

At 0700 on October 3, 2006 a silver Dodge pickup truck was observed circling the parking lot of Dunn Tire. At 0715, a truck from Modern arrived to pick up the roll-off container, meeting with the individual in the silver Dodge. The container was checked for contents previously but not prior to removal. Later at 0830, the silver Dodge returned pulling a small trailer and parking along the newly paved swath. After a brief introduction and discussion regarding their purpose, it was discovered they work for **Exemption 7(C)** and were sent to remove the pallets scattered along the swath. They stated they had permission from the NYSDEC and would remove pallets only, no dirt. They were asked to standby as Barb Youngberg was contacted. During the conversation with Barb, the individuals in the truck interrupted to say they were leaving. Barb contacted **Exemption 7(C)**'s office, speaking with **Exemption 7(C)**, and it was agreed to halt any removal of material until it was surveyed to prevent inadvertent removal of slag.

Survey Information:

An Exploranium GR-135 was utilized as a dose rate meter to obtain dose rate readings at waist height (~ 1 meter) and on contact with the surface. A Ludlum 2221 coupled with a Ludlum 2 x 2 NaI probe was used to confirm/pinpoint elevated readings and locate sample locations. The 2221 was used sparingly on October 2nd and 3rd and not utilized on October 4th. Weather conditions played a role in that decision as it rained heavily on the 3rd and 4th. Initial focus was the rear parking lot of the Rapid Bowling property. The lot survey encompassed the entire area from the back wall of the bowling center to the edge of the lot abutting the marshy area and from the grassy area abutting the lot on the hotel side to the center driving lane separating the lots of 9524 and 9540. With the exception of 4 parking slots, the driving row separating the first row of spots along the building and the second row of spots, the lot was surveyed 100%. As stated previously the parking spots were used to establish a grid pattern. Waist height and contact readings were taken in each grid. The highest contact reading and the range of waist height readings were recorded for each grid. Waist height readings ranged from 10 - 250 uR/hr and the maximum observed contact reading was 420 uR/hr. Please refer to the attached survey map for detailed readings/locations.

While surveying the rear lot, elevated readings were discovered in the grassy area abutting the parking lot on the hotel side. Several spot contact readings were in excess of 400 uR/hr. Due to time constraints and inclement weather, this area was not surveyed in its entirety.

The survey continued in the paved area/parking lot in the front of the building. There is a five feet wide grass buffer zone between the Rapid Bowling Center and Summit Inn, running from NFB to the main building of Rapid. Readings here ranged from 7 to 200 uR/hr nearest the road, at waist height. Contact readings ranged from 150 uR/hr to as high as 420 uR/hr nearest the road.

The western wall of the main building abuts the parking lot of the Summit Inn. Readings along the entire length ranged from 4 - 7 uR/hr at waist height. From the rear corner of the building to the rear lot of the Summit Inn, there exists a fence separating the two properties. Readings here ranged from 7 - 10 uR/hr taken at waist height.

In the front of the building there is an elevated planter 4 feet wide by 70 feet long by 2 feet high. Readings of 4 - 7 uR/hr were observed here. The gridding /survey methodology used in the rear lot was also used in the front lot although there are only 13 marked parking spots here. Readings in the marked area of the lot ranged from 15 (nearest the planter) - 180 uR/hr at waist height. The maximum contact reading is 300 uR/hr nearest the Rapid Bowling Center sign, abutting the sidewalk.

The remainder of the front lot is paved but unmarked. It measures approximately 30 feet wide by 104 feet deep, measured from the sidewalk along NFB to the main building of Rapid. Here there

are various layers and ages of blacktop. Dose rates at waist height range from 7 - 105 (nearest NFB) uR/hr. The two highest contact readings in this area are 120 and 185 uR/hr. Please refer to the attached map for exact locations.

On October 4, 2006, three additional parking spots in the rear lot of Rapid, were surveyed before the thunder, lightning and heavy rain began. Utilizing a tire bag procured from Dunn Tire as rain gear, the survey continued where the First Assembly of God church parking lot and the used car lot meet. There is a grassy area between the church parking lot and the used car lot. Readings were 5 - 8 uR/hr at waist height. The area behind the used car lot which abuts the church parking lot is overgrown with brush and trees. This area was not surveyed due to conditions, including darkness, and time limitations. Waist height dose rates, along the edge of the church lot and the brushy area, increased to 12 - 18 uR/hr as the survey progressed from the rear of the used car lot to the storage shed on the church property. Please refer to the attached drawing.

There is a fenced area directly behind the used car lot measuring 53 feet wide by 179 feet in length. There is a 12 foot wide gated opening just off the used car lot. This area is blacktopped for the most part, although in very poor condition. Trees and scrub brush are also present. There is debris scattered and piled throughout including tires, pallets, car parts, ruptured tar pails and garbage. Waist height readings range from 200 - 450 uR/hr in the accessible areas. Contact readings here are the highest observed on site ranging from 450 - 750 uR/hr. This area was not surveyed 100%.

Directly behind the fenced area, there is a bermed area with exposed slag evident. Contact readings in this area are 500 - 600 uR/hr. Due to tree cover and weather conditions it was difficult to see in this area. Approximately 15 - 20 feet from the fence there appears to be two or more piles of debris containing soil, asphalt, concrete and car parts. General area dose rates, at waist height, were 40 - 50 uR/hr but it was difficult to discern if the piles themselves were the cause, due to the proximity of the exposed slag.

Conclusions:

Due to inclement weather and time constraints, we were unable to complete the survey as originally intended. Approximately 95% of the Rapid Bowling parking lot has been completed with the exception of three parking spots in the rear and eighteen parking spots along the side of the building. Additional surveys need to be done in the grassy area abutting the parking lot, hotel side, and the marshy area in the rear of the Rapid property. Resurvey of the areas previously identified as elevated which were re-paved, may provide some information as to the efficacy of re-paving as a viable, although temporary, solution to minimizing the exposure rate. The rear parking lot of the Dunn Tire facility, including the marshy area abutting the rear lot, and the fenced area behind the used car dealer, also need to be surveyed. The surveys will allow us to bound the areas where slag was used as fill.

The survey results are similar to and in some cases, slightly higher than results obtained in a survey conducted on May 23-24, 1979 by the NYSDOH. The only exception being the fenced area behind the used car lot. It is difficult to determine, referring to the previous survey report, if the fenced area was surveyed in 1979. A reference in the text designated as "new cars", stating dose rates in the 250 - 500 uR/hr range, may be the area in question based on the dose rates. Vehicles may have been parked in this area hindering the surveyor's ability to conduct a thorough survey. Various factors may account for differences in the reported survey results, including instrumentation, survey methodology and weathering/condition of the surface(s) surveyed.

Instrumentation:

Ludlum Model 2221 (#19) Ser # 183981, w/44-10 NaI probe Ser # PR195161
Calibration due date - 03/06/07

Exploranium GR-135 (#35) Ser # 2965N
Calibration due date - 08/11/07

Instrument response checks - Back of vehicle, Mode Image Salon

Pre-survey 10/02/06

<u>Ludlum 2221</u>	
<u>Bkg.(cpm)</u>	<u>Cs-137 Source (cpm)</u>
2701	179353
2992	179039
2902	178585

Post Survey 10/02/06

<u>Ludlum 2221</u>	
<u>Bkg. (Cpm)</u>	<u>Cs-137 Source (cpm)</u>
3369	178245
3348	179130
3399	179152

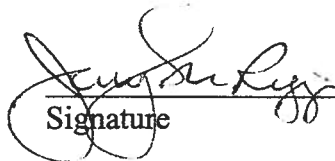
Pre-survey 10/03/06

<u>Ludlum 2221</u>	
<u>Bkg.(cpm)</u>	<u>Cs-137 Source (cpm)</u>
2999	178899
2912	178727
2861	179136

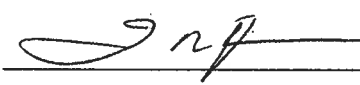
Post Survey 10/03/06

<u>Ludlum 2221</u>	
<u>Bkg. (Cpm)</u>	<u>Cs-137 Source (cpm)</u>
3046	178727
3022	179913
3122	179835

Reporting Specialist: Jerry Riggi


Signature

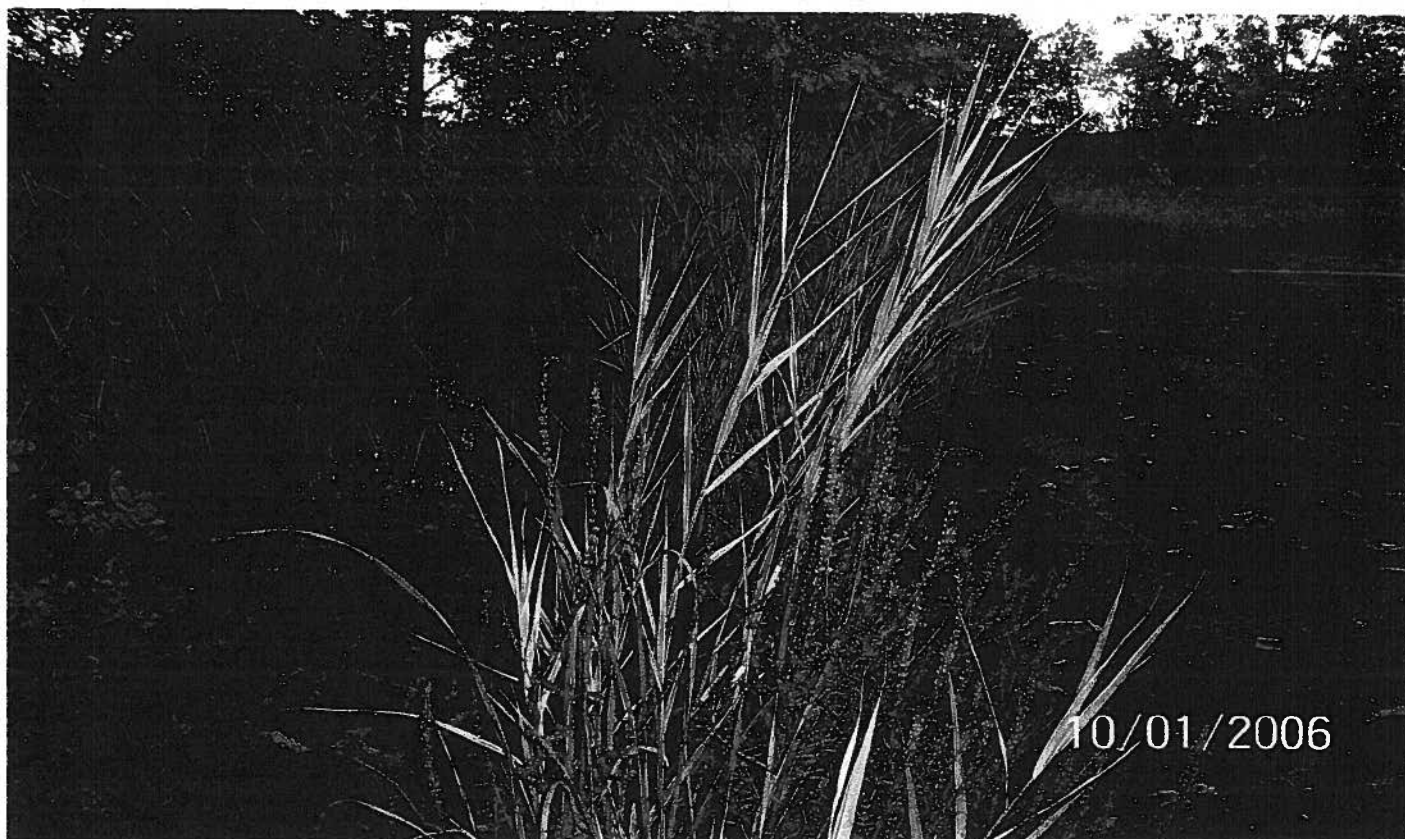
12/01/06
Date of Report

Reviewed by:  **Date:** 12/1/06

Attachments:
Survey Maps



Marshy area behind 9524 Niagara Falls Boulevard.



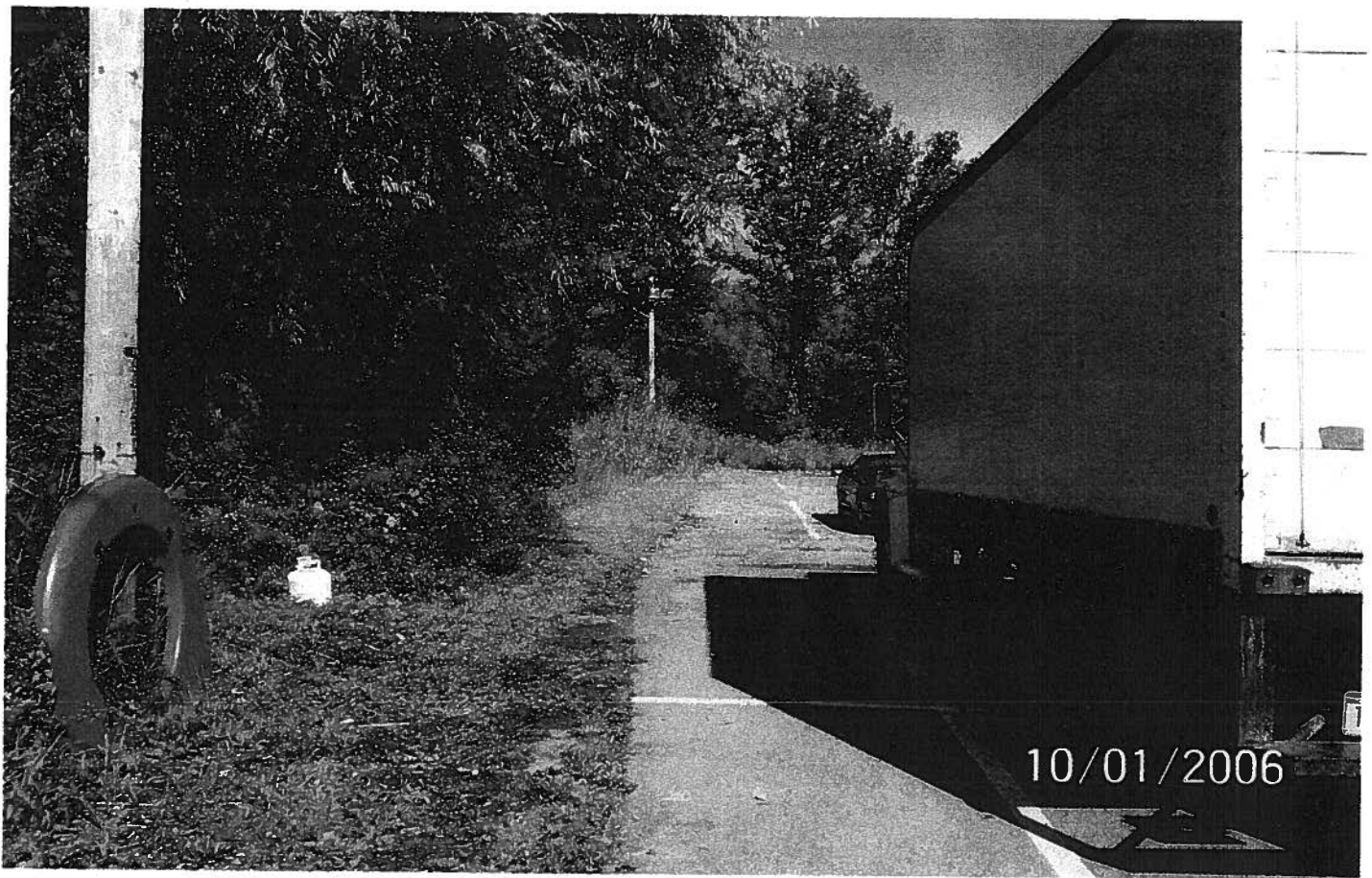
Rear parking lot at 9524 NFB. Note poor condition of the asphalt.



Rear parking lot at 9524 NFB looking toward the western edge of the parking lot. Note the poor condition. Readings here are in the 10-15 uR/hr range.



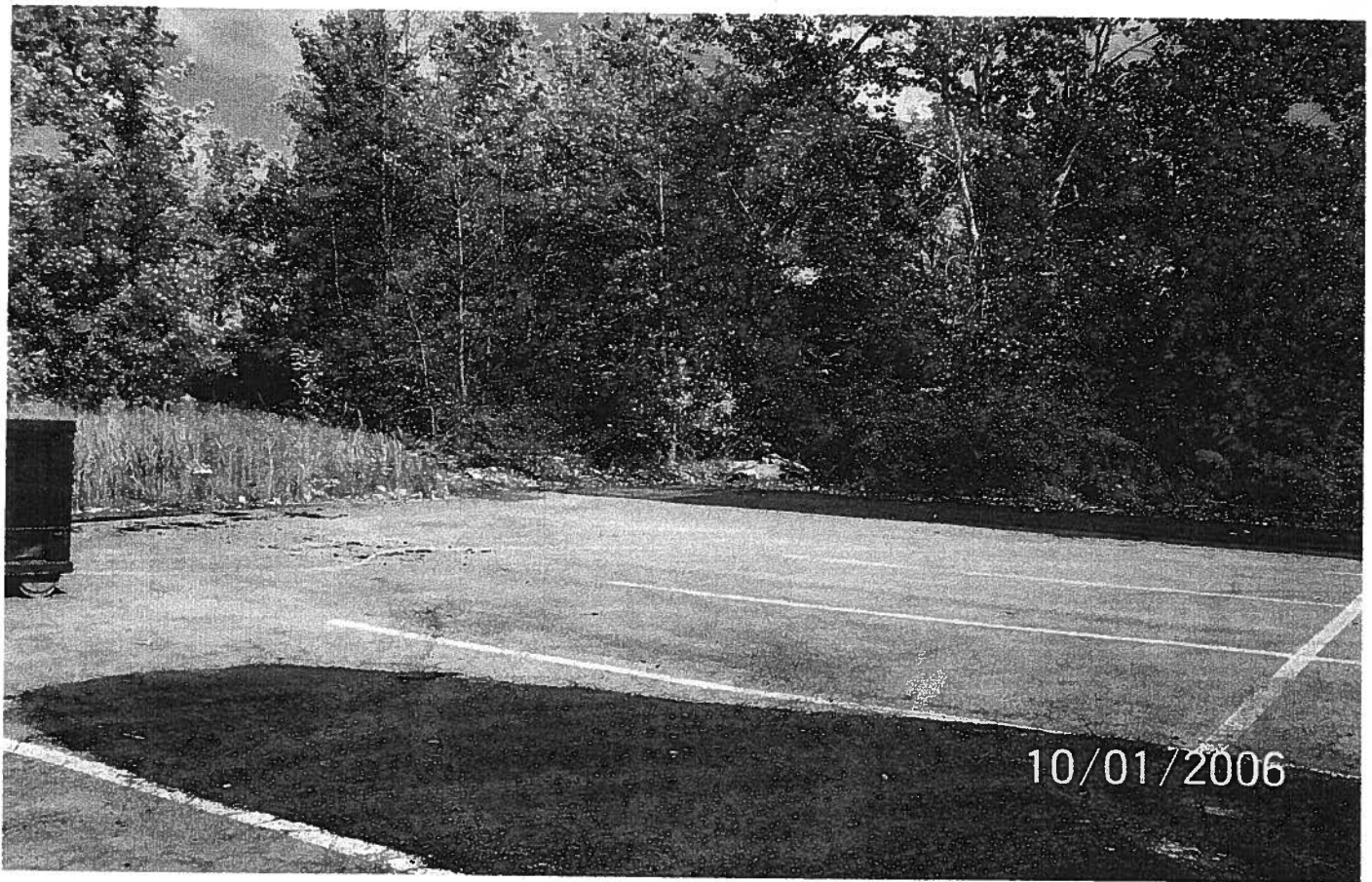
Parking lot behind 9540 and 9524 NFB. Building on the left is Dunn Tire, on the right is Rapid Bowling.



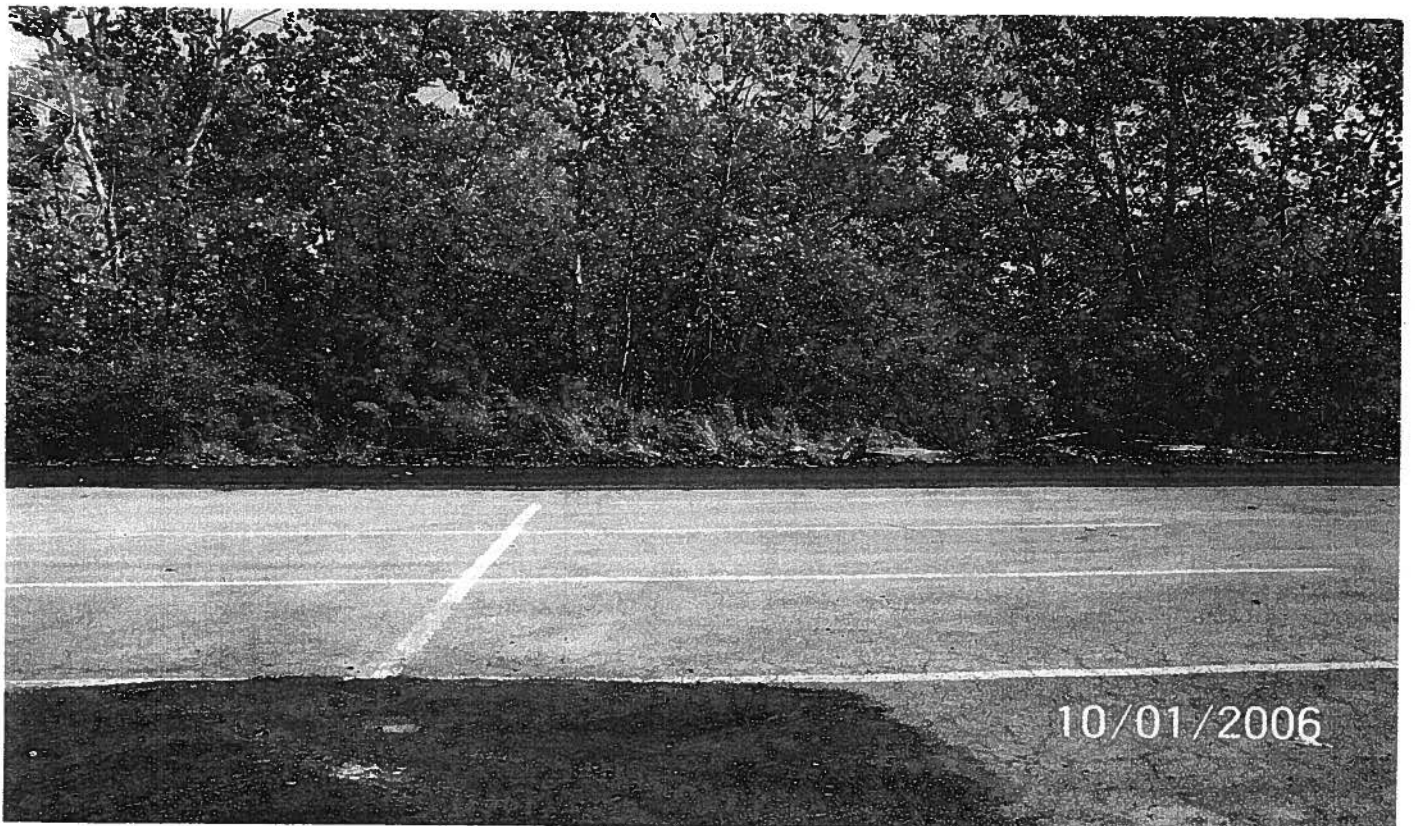
Rear parking lot of Rapid Bowl looking toward the marshy area. Grassy area on the left exhibited elevated readings in spots. A thorough survey was not done here.



Paving crew repaving ten foot swath behind Dunn Tire.



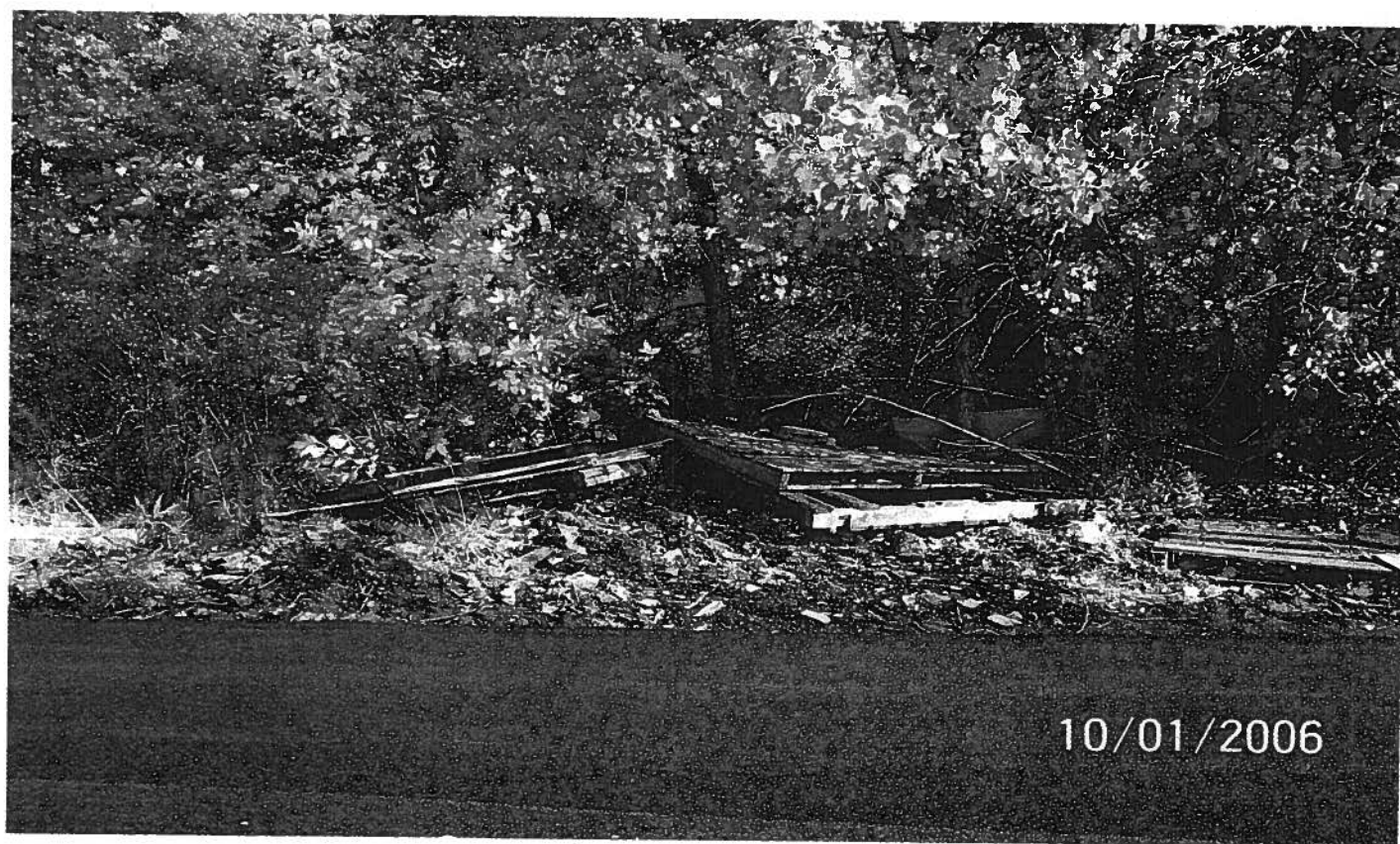
Newly paved area behind Dunn Tire. Note debris pile at the end of the swath. "Newly paved" area in the foreground happened previous to this evolution.



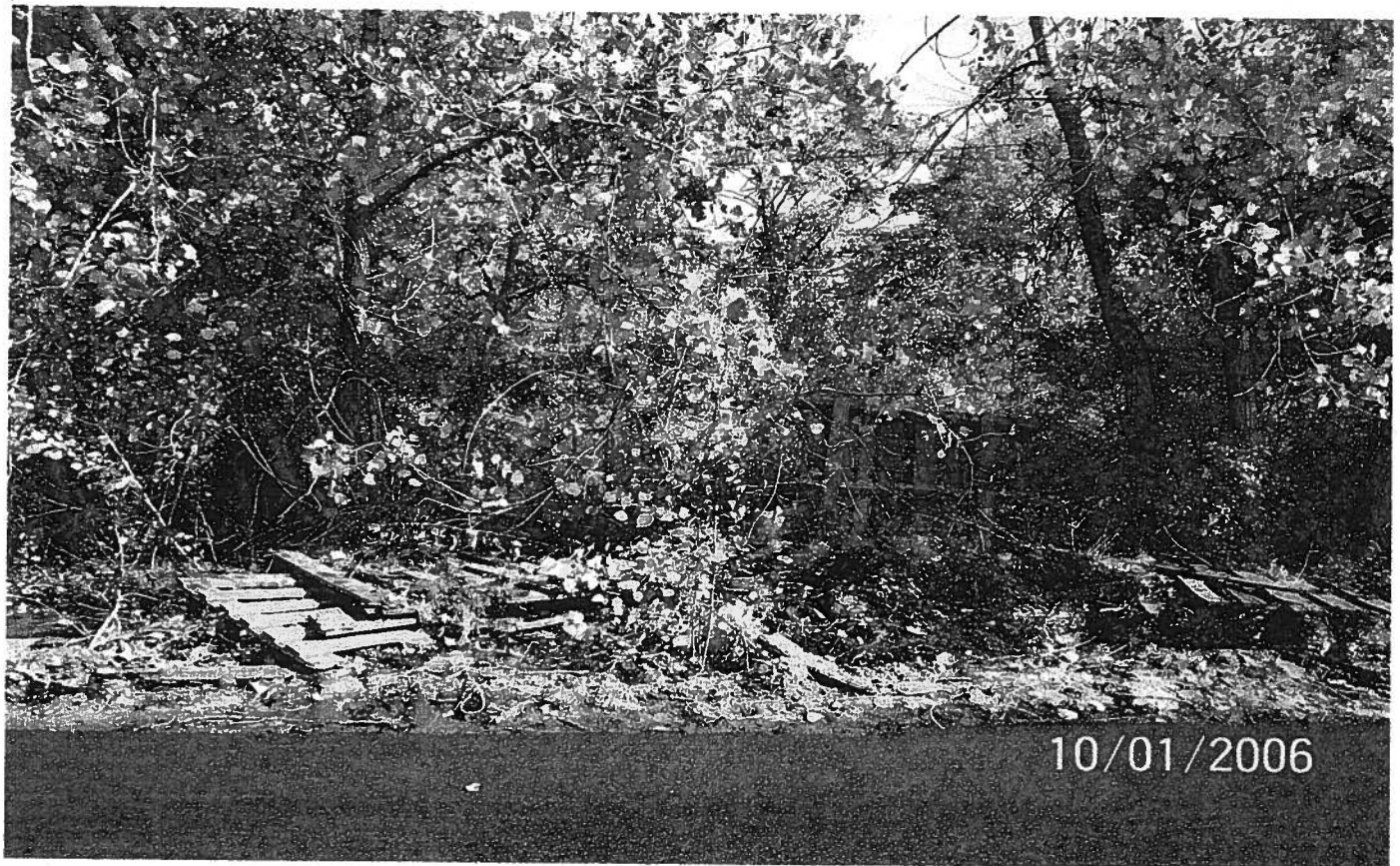
Another shot of the newly paved swath. Note the debris piles along the edge from the scraping of the area prior to paving.



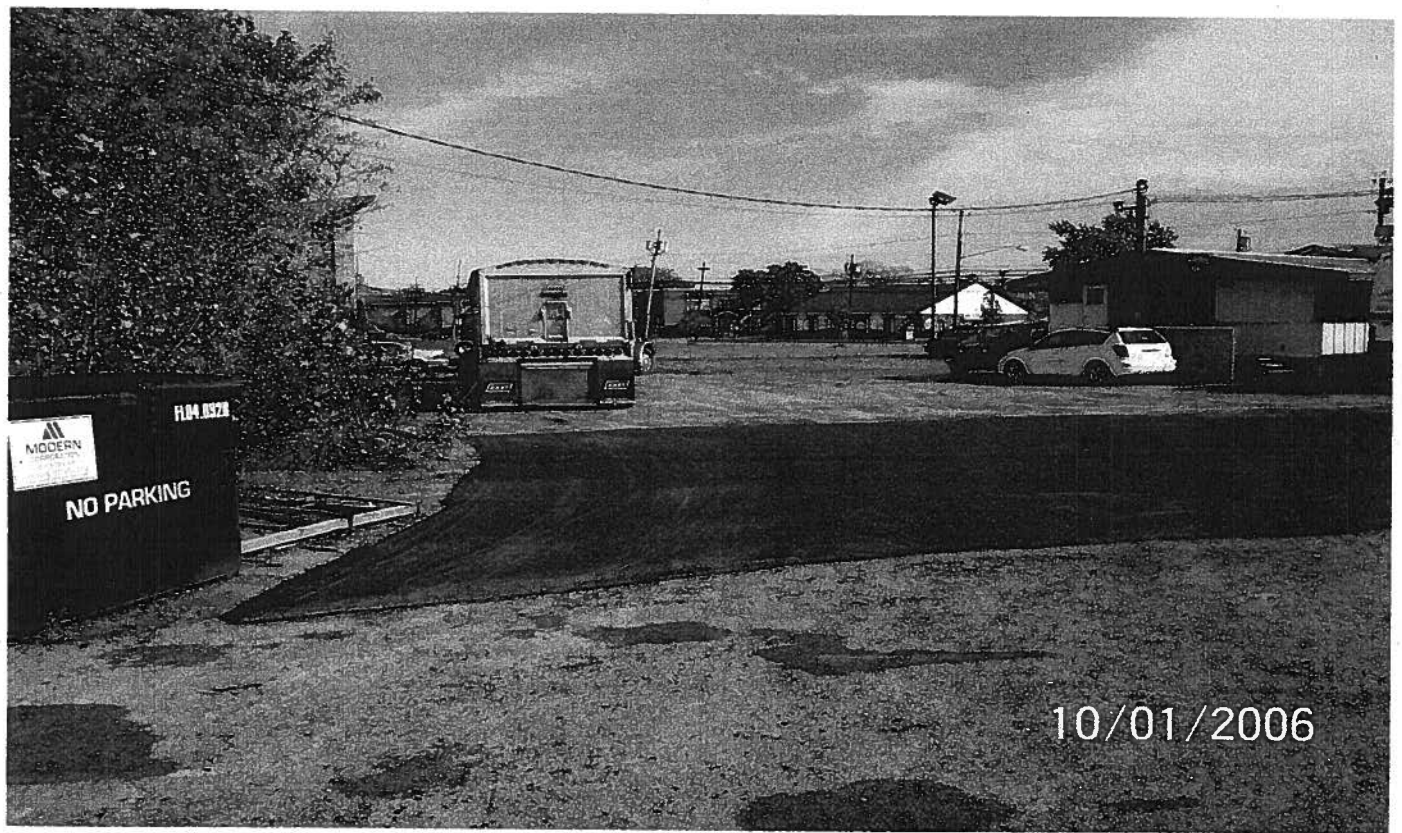
Debris pile at the end of the newly paved swath behind Dunn Tire. Exposed slag is evident resulting in dose rate readings in excess of 500 uR/hr.



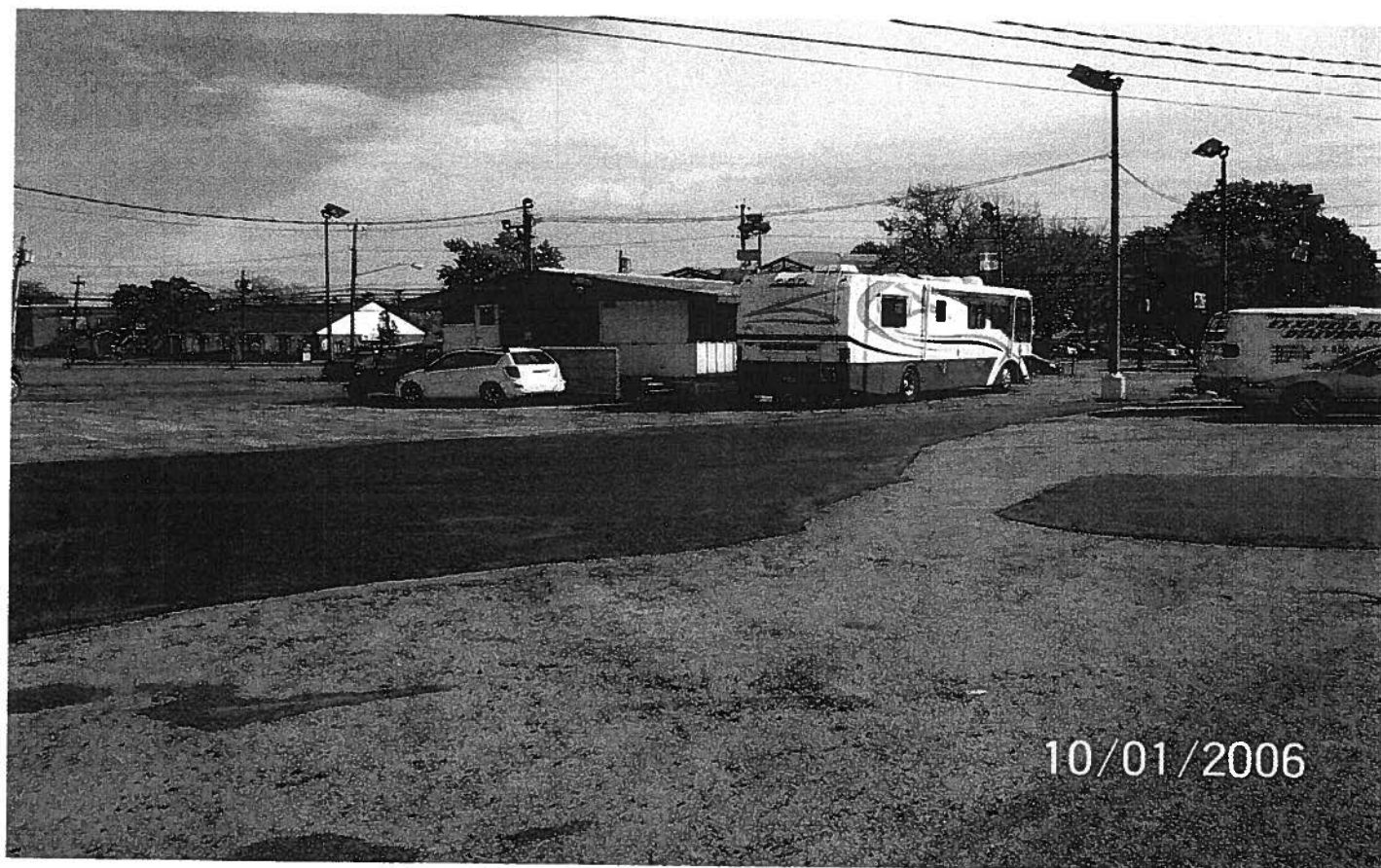
Pallets and other debris scattered along the entire edge of the 10' x 100' swath. Readings here exceed 500 uR/hr.



More debris and pallets scattered along the newly paved swath.



Newly paved triangular shaped area between Dunn Tire and the used car dealer lot.



Newly paved triangular shaped area between Dunn Tire and the used car dealer lot.



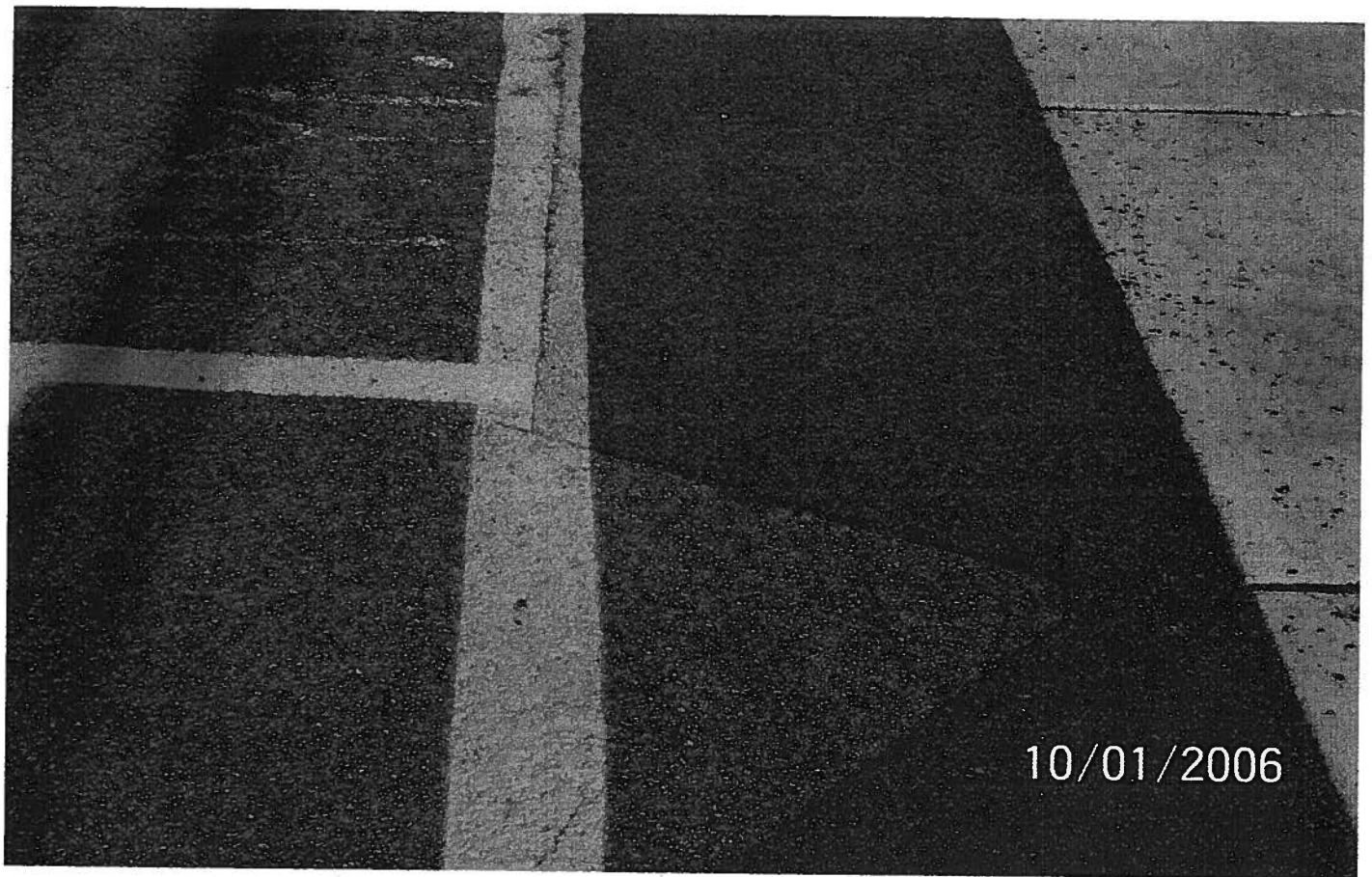
Debris located in fenced area behind the used car dealer. Dose rate readings inside the fenced area range from 200 – 750 $\mu\text{R/hr}$.



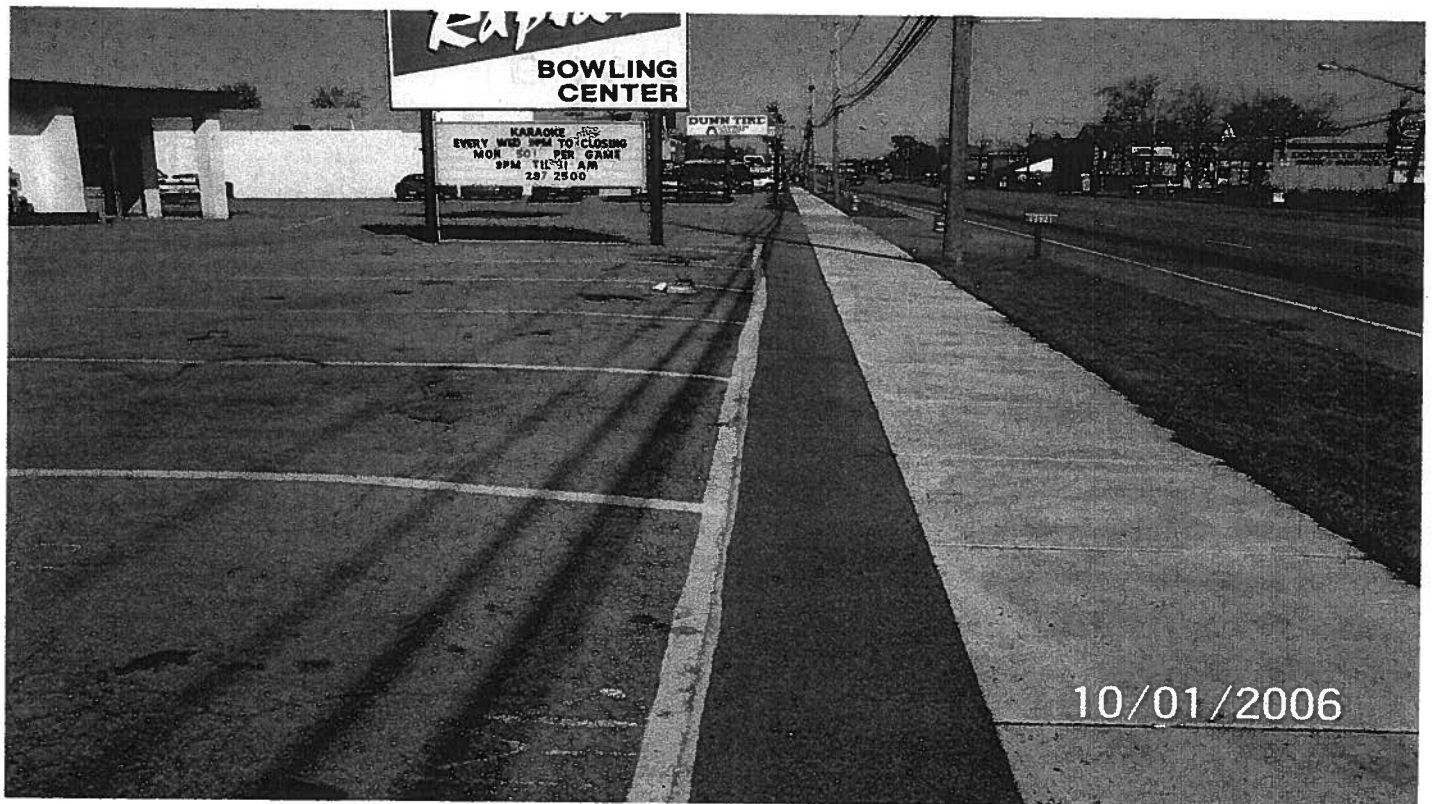
More debris in the fenced area. This area is blacktopped also and may be the original surface as placed in the early 60's. Note poor condition and the brush growing up through the cracks in the surface.



More debris inside the fenced area.



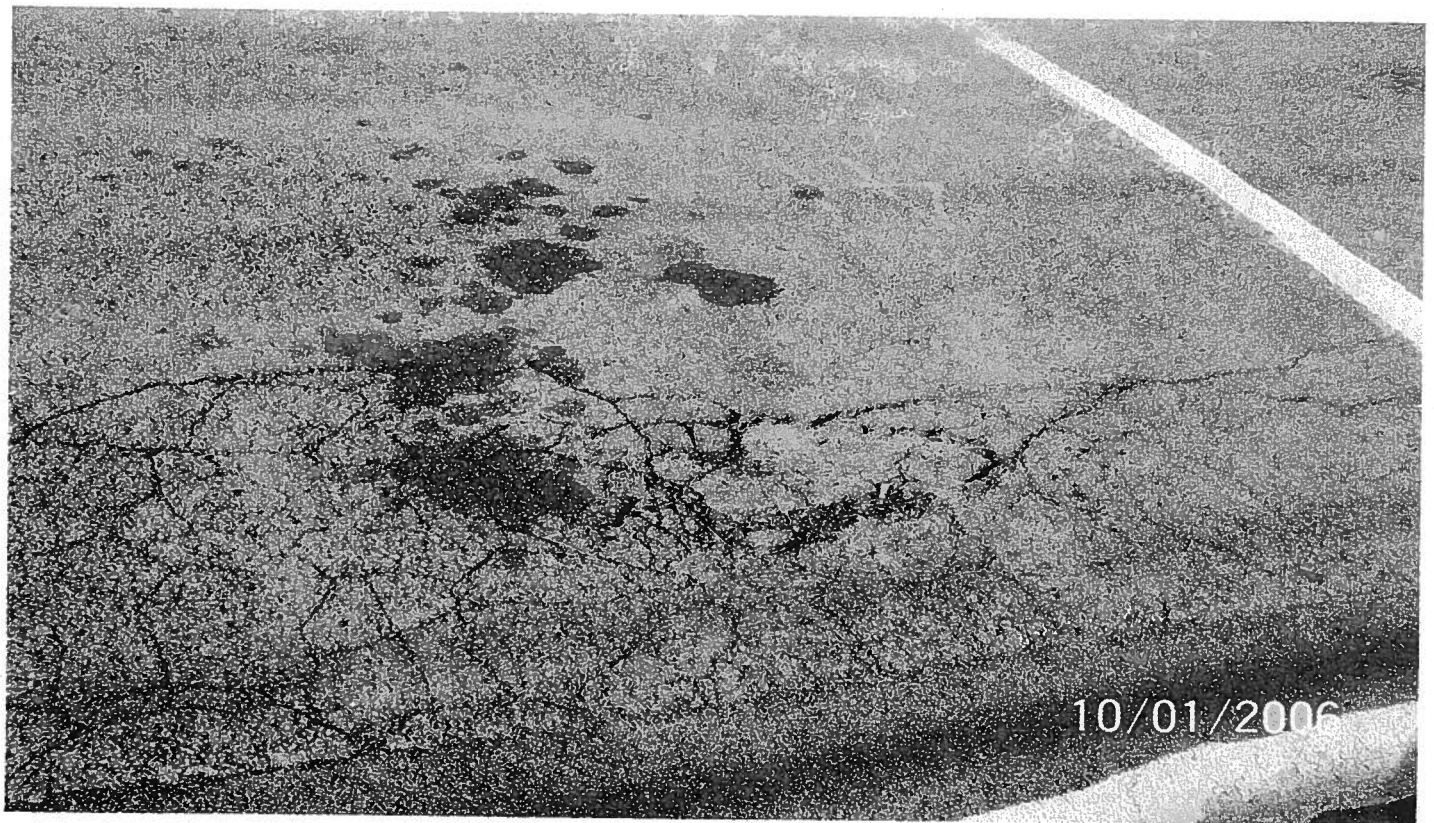
Front parking lot of Rapid Bowl. Note separation between "old" and "new" asphalt, Elevated readings were found on contact with the old but not with the new surface. Sidewalk on the right runs alongside NFB.



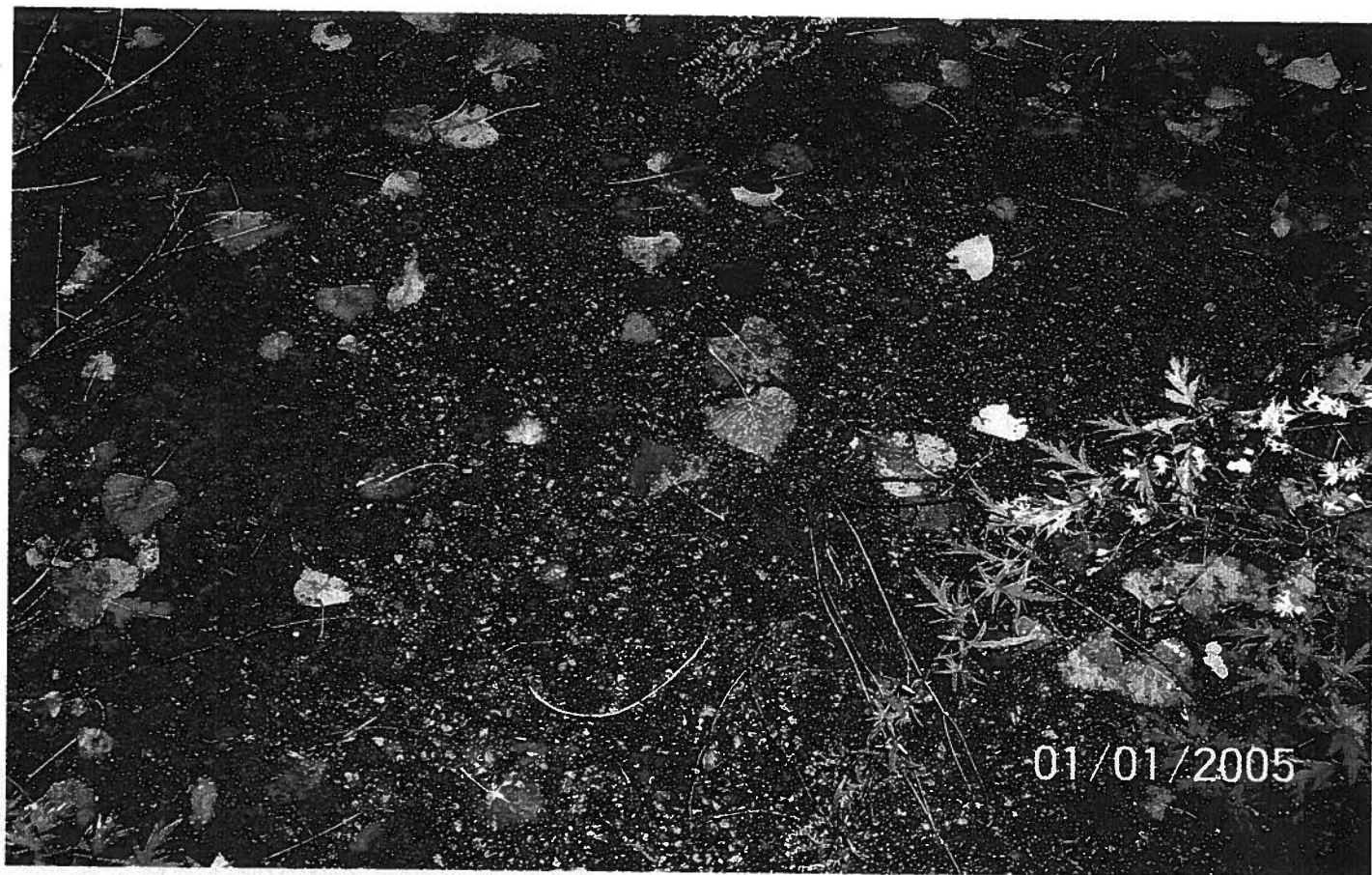
View of Rapid Boel front parking area and sidewalk, with Dunn Tire in the background. Note separation of asphalt along perpendicular yellow painted line.



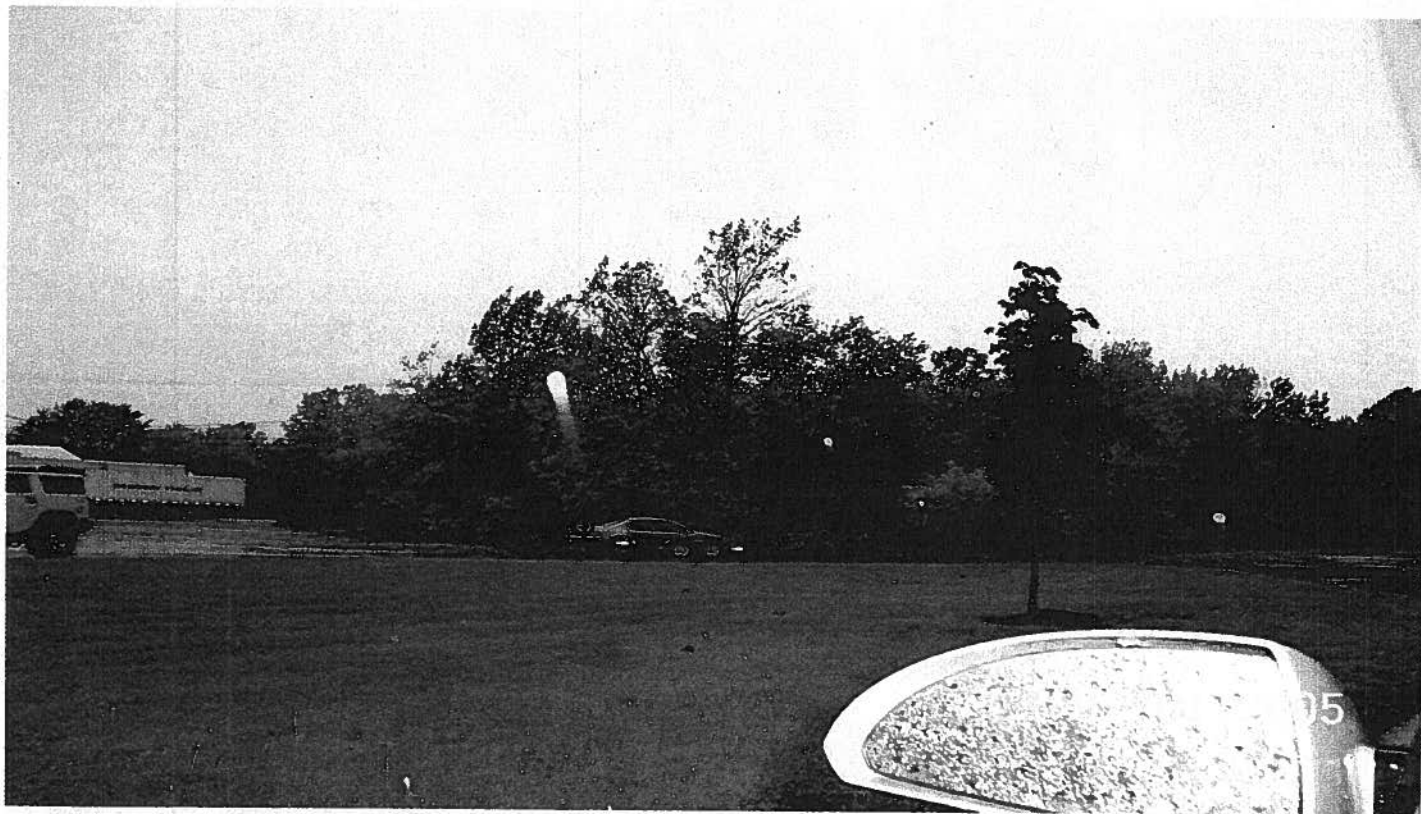
Area of Rapid Bowl parking lot showing disrepair. Note the underlying layer of asphalt. Typically these areas exhibit higher contact readings than the surrounding top layer of asphalt.



Another area of disrepair in the front parking lot of Rapid Bowl.



Asphalt surface in the fenced area. Note the exposed aggregate in the well-worn surface. Exposed slag is not evident here although the highest dose rate readings on site were found here.



Taken from the First Assembly of God Church parking lot looking toward the rear of the used car dealer and Dunn Tire. The grassy area and wooded lot have yet to be surveyed.



First Assembly of God Church parking lot. General area waist height readings to three times background were observed along the edge of the lot to the wooden structure in the background.



Photo illustrates just how wet the rear parking lot and marshy area that abuts it, really are. Within minutes of the rain commencing, the area was flooded. Hence the reason for the condition of the rear lot as seen in previous photos.

 ***** G A M M A S P E C T R U M A N A L Y S I S *****

Filename: DET02

Report Generated On : 10/13/2006 10:55:37 AM

Sample Title : NFB 9540
 Sample Description : Dunn tire
 Sample Identification : NFB10040601
 Sample Type : slag
 Sample Geometry : tub

BEHIND FENCED AREA

220 uR/hr

Peak Locate Threshold : 3.00
 Peak Locate Range (in channels) : 1 - 4096
 Peak Area Range (in channels) : 40 - 4096
 Identification Energy Tolerance : 1.000 keV

Sample Size : 6.258E+002 gms

Sample Taken On : 10/4/2006 ~~12:09:00~~ ^{09:00:00} AM

Acquisition Started : 10/13/2006 10:19:13 AM

Live Time : 1800.0 seconds

Real Time : 1877.0 seconds

Dead Time : 4.10 %

Energy Calibration Used Done On : 3/3/2005
 Efficiency Calibration Used Done On : 1/24/2002
 Efficiency ID : Labsoc 500ml TUB

 ***** P E A K A N A L Y S I S R E P O R T *****

Detector Name: DET02

Sample Title: NFB 9540

Peak Analysis Performed on: 10/13/2006 10:55:37 AM

Peak Analysis From Channel: 40

Peak Analysis To Channel: 4096

	Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	FWHM (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
M	1	61-	89	69.43	34.37	3.18	1.30E+004	337.06	3.63E+004
m	2	61-	89	75.07	37.19	3.16	1.14E+004	369.95	5.72E+004
m	3	61-	89	80.86	40.09	3.16	1.12E+004	353.89	7.82E+004
F	4	106-	123	115.35	57.34	2.35	1.74E+004	227.96	9.81E+004
M	5	123-	139	127.63	63.49	1.32	1.13E+003	170.78	5.56E+004
m	6	123-	139	131.22	65.28	1.32	2.78E+003	187.12	6.93E+004
M	7	141-	164	150.53	74.94	1.91	2.91E+004	302.55	1.07E+005
m	8	141-	164	155.37	77.36	1.92	5.29E+004	321.23	1.23E+005
M	9	166-	195	169.69	84.53	1.89	3.09E+003	212.64	7.19E+004
m	10	166-	195	175.46	87.41	1.90	1.84E+004	243.77	1.14E+005
m	11	166-	195	180.84	90.10	1.90	2.05E+004	242.98	1.20E+005
m	12	166-	195	187.58	93.48	1.91	2.60E+004	245.62	1.18E+005
M	13	206-	226	211.86	105.62	1.77	6.89E+003	197.85	7.67E+004
m	14	206-	226	218.58	108.99	1.78	2.55E+003	182.65	9.57E+004
F	15	227-	236	231.31	115.36	1.70	1.71E+003	182.72	6.17E+004
F	16	248-	269	259.38	129.40	2.88	1.43E+004	261.08	1.42E+005
F	17	304-	319	309.12	154.28	1.79	3.17E+003	193.81	1.01E+005
F	18	362-	383	373.06	186.26	2.26	9.94E+003	224.42	1.30E+005
	19	397-	404	399.54	199.51	0.84	2.87E+002	303.90	4.57E+004
F	20	408-	430	419.56	209.52	2.03	1.76E+004	223.53	1.27E+005
F	21	466-	489	478.71	239.11	2.48	2.27E+005	456.48	1.26E+005
F	22	529-	550	541.41	270.48	1.75	1.12E+004	173.18	7.44E+004
F	23	552-	567	555.92	277.74	1.94	6.68E+003	157.07	5.00E+004
M	24	582-	613	591.55	295.56	2.23	2.08E+004	188.08	4.92E+004
m	25	582-	613	601.23	300.40	2.23	1.50E+004	170.06	5.20E+004
F	26	649-	663	656.91	328.25	1.80	8.43E+003	157.17	4.21E+004
F	27	669-	689	677.75	338.68	2.11	4.04E+004	226.31	5.66E+004
F	28	694-	716	704.98	352.30	2.20	3.60E+004	211.57	5.13E+004
F	29	815-	832	820.02	409.84	1.96	4.88E+003	124.74	3.09E+004
	30	878-	889	880.93	440.30	1.34	1.16E+002	206.56	1.69E+004
F	31	901-	916	906.26	452.97	1.81	7.25E+002	99.35	2.31E+004
F	32	917-	939	926.86	463.27	2.34	1.30E+004	144.64	3.17E+004
F	33	1008-	1035	1022.34	511.03	2.84	2.75E+004	179.61	3.47E+004
F	34	1113-	1133	1125.44	562.59	1.82	1.75E+003	97.57	2.41E+004
F	35	1153-	1180	1167.12	583.44	2.63	7.93E+004	272.56	3.50E+004
F	36	1205-	1232	1219.29	609.53	2.62	3.09E+004	182.85	2.78E+004
F	37	1443-	1469	1454.96	727.39	2.62	1.70E+004	145.83	2.20E+004
F	38	1496-	1518	1510.75	755.29	2.39	1.87E+003	87.69	1.65E+004
M	39	1519-	1556	1526.78	763.30	2.53	1.08E+003	80.06	1.14E+004
m	40	1519-	1556	1536.73	768.28	2.53	2.64E+003	87.47	1.35E+004
m	41	1519-	1556	1544.73	772.28	2.54	3.26E+003	89.78	1.28E+004
M	42	1559-	1578	1564.27	782.05	2.29	8.71E+002	73.47	7.84E+003

	Peak No.	ROI start	ROI end	Peak centroid	Energy (keV)	FWHM (keV)	Net Peak Area	Net Area Uncert.	Continuum Counts
m	43	1559-	1578	1571.25	785.54	2.29	2.41E+003	85.31	1.10E+004
F	44	1580-	1604	1590.15	794.99	2.62	8.82E+003	110.88	1.36E+004
F	45	1607-	1624	1612.40	806.12	2.14	3.99E+002	64.11	8.36E+003
M	46	1655-	1695	1661.19	830.52	2.80	1.12E+003	70.55	6.88E+003
m	47	1655-	1695	1671.54	835.69	2.81	3.59E+003	83.52	9.73E+003
m	48	1655-	1695	1680.44	840.14	2.81	2.41E+003	75.03	9.23E+003
F	49	1705-	1736	1721.24	860.55	2.82	9.79E+003	108.60	1.24E+004
F	50	1775-	1793	1787.05	893.45	2.19	4.61E+002	61.61	7.36E+003
M	51	1795-	1837	1809.48	904.67	3.02	3.28E+003	82.91	9.88E+003
m	52	1795-	1837	1822.74	911.30	3.03	5.86E+004	228.58	9.52E+003
F	53	1856-	1877	1868.30	934.08	2.55	1.37E+003	61.80	6.39E+003
	54	1886-	1893	1889.01	944.43	1.34	3.45E-001	70.01	2.42E+003
M	55	1911-	1953	1918.53	959.20	2.97	1.08E+003	64.30	5.49E+003
m	56	1911-	1953	1929.59	964.73	2.97	1.16E+004	133.96	7.62E+003
m	57	1911-	1953	1938.37	969.11	2.97	3.52E+004	187.11	7.35E+003
F	58	1995-	2015	2003.27	1001.56	2.99	5.75E+002	50.97	4.59E+003
F	59	2061-	2073	2067.25	1033.55	2.19	4.09E+002	46.66	2.63E+003
F	60	2119-	2137	2130.27	1065.06	2.38	3.54E+002	48.03	4.03E+003
F	61	2150-	2169	2157.86	1078.86	2.70	9.50E+002	52.96	4.08E+003
F	62	2175-	2197	2188.78	1094.32	3.02	8.90E+002	53.68	4.72E+003
	63	2211-	2228	2221.34	1110.60	2.77	1.58E+002	118.62	4.26E+003
F	64	2228-	2257	2241.05	1120.45	3.00	6.83E+003	90.65	6.76E+003
F	65	2293-	2320	2309.31	1154.58	4.00	1.13E+003	56.13	5.04E+003
F	66	2459-	2486	2476.25	1238.04	3.03	2.21E+003	64.67	5.64E+003
F	67	2487-	2504	2493.97	1246.90	3.30	6.53E+002	53.05	3.76E+003
F	68	2550-	2570	2561.94	1280.88	2.32	3.81E+002	47.72	4.05E+003
F	69	2740-	2765	2755.20	1377.49	3.38	1.73E+003	60.28	4.75E+003
M	70	2790-	2830	2803.00	1401.39	3.50	6.23E+002	47.19	3.79E+003
m	71	2790-	2830	2815.59	1407.68	3.51	9.86E+002	50.86	4.15E+003
F	72	2907-	2932	2918.42	1459.08	3.19	1.11E+003	50.98	3.66E+003
M	73	2984-	3037	2992.29	1496.01	3.24	1.26E+003	52.75	2.64E+003
m	74	2984-	3037	3003.33	1501.52	3.24	7.66E+002	46.13	3.34E+003
m	75	2984-	3037	3018.59	1509.15	3.24	7.80E+002	51.28	3.07E+003
m	76	2984-	3037	3025.94	1512.83	3.24	7.20E+002	50.26	2.95E+003
F	77	3107-	3130	3114.90	1557.29	2.50	2.09E+002	37.52	2.64E+003
M	78	3148-	3203	3162.59	1581.13	3.63	1.27E+003	50.81	3.17E+003
m	79	3148-	3203	3176.73	1588.19	3.63	5.32E+003	88.98	3.21E+003
m	80	3148-	3203	3185.41	1592.53	3.63	3.60E+003	79.56	3.26E+003
F	81	3232-	3251	3241.83	1620.73	3.26	1.96E+003	59.36	2.89E+003
M	82	3254-	3288	3261.70	1630.66	2.95	1.94E+003	60.07	2.61E+003
m	83	3254-	3288	3276.78	1638.20	2.96	5.91E+002	41.53	2.47E+003
F	84	3310-	3328	3322.37	1660.99	2.34	2.07E+002	38.78	2.12E+003
F	85	3443-	3471	3459.72	1729.64	3.36	1.15E+003	48.17	2.95E+003
F	86	3512-	3547	3529.32	1764.42	3.74	6.26E+003	82.58	3.53E+003
F	87	3682-	3704	3695.25	1847.34	3.39	6.15E+002	44.20	2.46E+003

M = First peak in a multiplet region

m = Other peak in a multiplet region

F = Fitted singlet

Errors quoted at 1.000 sigma

 ***** N U C L I D E I D E N T I F I C A T I O N R E P O R T *****

Sample Title: NFB 9540

Nuclide Library Used: C:\GENIE2K\CAMFILES\NYDEC.nlb

..... IDENTIFIED NUCLIDES

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (pCi/gms)	Activity Uncertainty
MN-54	0.887	834.83*	99.97	8.65230E+000	3.36908E-001
EU-155	0.887	60.01	1.21		
		86.06	0.16		
		86.54*	32.80	3.47378E+001	2.10139E+000
		105.31*	21.80	1.99044E+001	1.27130E+000
BI-212	0.993	39.86*	1.10	7.14897E+002	1.87075E+002
		164.00 @	0.00		
		727.17*	11.80	3.09445E+002	1.05451E+001
		785.42*	2.00	2.72121E+002	1.28828E+001
		1620.56*	2.75	2.64103E+002	1.80238E+001
PB-212	0.976	74.81*	9.60	1.88047E+002	1.09158E+001
		77.11*	17.50	1.86935E+002	1.07277E+001
		87.20*	6.30	1.80167E+002	1.01981E+001
		89.80*	1.75	7.23791E+002	4.01776E+001
		115.19*	0.60	1.81680E+002	2.13501E+001
		164.20	0.00		
		238.63*	44.60	4.67700E+002	1.96845E+001
		300.09*	3.41	4.80793E+002	2.10006E+001
BI-214	0.985	609.31*	46.30	1.26289E+002	5.09004E+000
		768.36*	5.04	1.16689E+002	5.35002E+000
		806.17*	1.23	7.46210E+001	1.22207E+001
		934.06*	3.21	1.08238E+002	6.07273E+000
		1120.29*	15.10	1.28998E+002	5.09680E+000
		1155.19*	1.69	1.95090E+002	1.20812E+001
		1238.11*	5.94	1.13312E+002	5.24998E+000
		1280.96*	1.47	8.08640E+001	1.05063E+001
		1377.67*	4.11	1.38381E+002	6.66354E+000
		1385.31	0.78		
		1401.50*	1.39	1.48782E+002	1.23253E+001
		1407.98*	2.48	1.32425E+002	8.15790E+000
		1509.19*	2.19	1.24862E+002	9.67084E+000
		1661.28*	1.15	6.81941E+001	1.36471E+001
		1729.60*	3.05	1.47560E+002	1.48008E+001
		1764.49*	15.80	1.57766E+002	1.63017E+001
		1847.44*	2.12	1.20609E+002	1.81957E+001
		2118.54	1.21		
PB-214	0.842	74.81*	6.33	2.85193E+002	1.65550E+001
		77.11*	10.70	3.05739E+002	1.75455E+001
		87.20*	3.70	3.06774E+002	1.73645E+001
		89.80*	1.03	1.22976E+003	6.82637E+001
		241.98	7.49		
		295.21*	19.20	1.16562E+002	5.01013E+000

Nuclide Name	Id Confidence	Energy (keV)	Yield (%)	Activity (pCi/gms)	Activity Uncertainty
PB-214	0.842	351.92*	37.20	1.19800E+002	5.39126E+000
		765.96	0.08		
		785.91*	1.10	4.94771E+002	2.34236E+001
AC-228	0.988	89.95*	2.10	6.03159E+002	3.34813E+001
		93.35*	3.50	4.59755E+002	2.48417E+001
		129.08*	2.80	3.37405E+002	1.71191E+001
		209.28*	4.40	3.36022E+002	1.52952E+001
		270.23*	3.60	3.14416E+002	1.39220E+001
		327.64*	3.20	3.07958E+002	1.45547E+001
		338.32*	11.40	4.24555E+002	1.88082E+001
		409.51*	2.13	3.19266E+002	1.70032E+001
		463.00*	4.40	4.54842E+002	2.19077E+001
		794.70*	4.60	4.37051E+002	1.47264E+001
		911.60*	27.70	5.28117E+002	1.73901E+001
		964.60*	5.20	5.75843E+002	2.08285E+001
		969.11*	16.60	5.50325E+002	1.91534E+001
		1587.90*	3.71	5.23163E+002	2.95920E+001
PA-234M	0.534	766.40	0.20		
		1001.03*	0.59	2.58665E+002	2.46785E+001
TH-234	0.542	63.30*	4.80	1.95255E+001	3.14465E+000
		92.38	2.81		
		92.80* @	2.77	7.62011E+002	4.11733E+001
U-235	0.545	89.96*	1.50	8.44423E+002	4.68739E+001
		93.35*	2.50	6.43657E+002	3.47783E+001
		105.00*	1.00	4.32261E+002	2.49138E+001
		109.14*	1.50	1.07409E+002	9.33342E+000
		143.76	10.50		
		163.35	5.08		
		185.71*	54.00	1.43999E+001	7.76371E-001
		202.12	1.00		
		205.31	4.70		

* = Energy line found in the spectrum.

@ = Energy line not used for Weighted Mean Activity

Energy Tolerance : 1.000 keV

Nuclide confidence index threshold = 0.30

Errors quoted at 1.000 sigma

***** I N T E R F E R E N C E C O R R E C T E D R E P O R T *****

	Nuclide Name	Nuclide Id Confidence	Wt mean Activity (pCi/gms)	Wt mean Activity Uncertainty
	MN-54	0.887	8.652297E+000	3.369078E-001
X	CD-109	0.941		
	EU-155	0.887	1.247912E+001	1.028609E+000
	BI-212 @	0.993	2.712090E+002	7.456767E+000
	PB-212	0.976	1.576929E+002	5.861260E+000
	BI-214	0.985	1.222319E+002	1.926021E+000
	PB-214	0.842	1.026448E+002	3.589977E+000
X	RN-219	0.365		
X	RA-226	1.000		
	AC-228	0.988	4.037836E+002	4.850098E+000
	PA-234M	0.534	2.586650E+002	2.467851E+001
	TH-234 @	0.542	1.984648E+001	3.135864E+000
	U-235	0.545	1.511106E+001	7.266229E-001

? = nuclide is part of an undetermined solution

X = nuclide rejected by the interference analysis

@ = nuclide contains energy lines not used in Weighted Mean Activity

Errors quoted at 1.000 sigma